

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/015270

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl⁷ H01L33/00, H01L21/205

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl⁷ H01L33/00, H01S5/00-5/50

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Toroku Jitsuyo Shinan Koho	1994-2004
Kokai Jitsuyo Shinan Koho	1971-2004	Jitsuyo Shinan Toroku Koho	1996-2004

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2002-237617 A (Toshiba Corp.), 23 August, 2002 (23.08.02), Par. Nos. [0020], [0025] to [0034]; Fig. 1 & JP 04-212479 A & US 5153889 A1 & JP 2000-058910 A	1-11
Y	JP 04-354382 A (Shin-Etsu Handotai Co., Ltd.), 08 December, 1992 (08.12.92), Full text (Family: none)	1-11
Y	HUANG et al., 'Twofold efficiency improvement in high performance AlGaInP light-emitting diodes in 555-620 nm spectral region using a thick GaP window layer', Appl.Phys.Lett., 1992, Vol.61, pages 1045 to 1047	1, 2

☒ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance
 "E" earlier application or patent but published on or after the international filing date
 "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
 "O" document referring to an oral disclosure, use, exhibition or other means
 "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
 "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
 "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
 "&" document member of the same patent family

Date of the actual completion of the international search
20 December, 2004 (20.12.04)

Date of mailing of the international search report
18 January, 2005 (18.01.05)

Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/015270

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl⁷ H01L33/00, H01L21/205

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl⁷ H01L33/00, H01S5/00-5/50

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Toroku Jitsuyo Shinan Koho	1994-2004
Kokai Jitsuyo Shinan Koho	1971-2004	Jitsuyo Shinan Toroku Koho	1996-2004

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2002-237617 A (Toshiba Corp.), 23 August, 2002 (23.08.02), Par. Nos. [0020], [0025] to [0034]; Fig. 1 & JP 04-212479 A & US 5153889 A1 & JP 2000-058910 A	1-11
Y	JP 04-354382 A (Shin-Etsu Handotai Co., Ltd.), 08 December, 1992 (08.12.92), Full text (Family: none)	1-11
Y	HUANG et al., 'Twofold efficiency improvement in high performance AlGaInP light-emitting diodes in 555-620 nm spectral region using a thick GaP window layer', Appl.Phys.Lett., 1992, Vol.61, pages 1045 to 1047	1,2

☒ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
20 December, 2004 (20.12.04)

Date of mailing of the international search report
18 January, 2005 (18.01.05)

Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/015270

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 10-065210 A (Mitsubishi Cable Industries, Ltd.), 06 March, 1998 (06.03.98), Par. Nos. [0034] to [0037], [0048]; Figs. 1, 2 (Family: none)	3, 6
Y	JP 06-296040 A (Sharp Corp.), 21 October, 1994 (21.10.94), Full text; Figs. 2, 5 & EP 0611131 A1 & US 5403916 A1	5, 9
Y	KISH et al., 'Very high-efficiency semiconductor wafer-bonded transparent-substrate ($\text{Al}_x\text{Ga}_{1-x}$) $_{0.5}\text{In}_{0.5}\text{P/GaP}$ light-emitting diodes', Appl. Phys.Lett., 1994, Vol.64, pages 2839 to 2841	2, 4, 6, 9